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## Earth Science 18.1 Water in the Atmosphere

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1: What is the source of all condensation and evaporation?

2: What is precipitation?

3: When it comes to understanding atmospheric processes, what is the most important gas in the atmosphere?

4: What fraction of the gases in the atmosphere does water vapor make up?

5: What are the three states of matter that water vapor can move between?

6: In what form does water pass through the atmosphere in the water cycle?

7: For water to change from state to state (liquid to gas) what must happen to energy?

8: Adding heat to a glass of ice water does not raise the temperature to the ice water until the ice completely melts. What does the heat do to the structure of the ice?

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9: Describe the process of ice melting?

10: The heat that melts ice does not produce a temperature change in the water. What is this heat referred to?

11: Latent heat becomes stored in the water as a form of energy. In regards to weather, what is it a major source of energy for?

12: The process of changing a liquid to a gas is called what?

13: How many joules of energy does it take to turn one convert 1 gram of water into water vapor?

14: The energy absorbed by water molecules during evaporation gives them what?

15: What is this heat energy absorbed by water molecules during evaporation called?

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16: When you emerge dripping wet from a swimming pool, you often feel a cooling effect. Why does this cooling effect result?

17: In condensation, water changes from what state to what state?

18: For condensation to occur, water molecules must release what?

19: What is it called when water goes directly from a solid to a gas? Give an example of this process that involves frozen carbon dioxide.

20: What is humidity a measure of?

21: Seal a jar half full of water. As the water in the jar starts to evaporate into the air in the jar, the temperature goes up. Why?

22: As more water molecules evaporate in the jar into the air in the jar, the pressure increases. The increase in pressure causes more of the water molecules to be forced back into the liquid water state. *At what point in this process of the water molecules changing between the two states do we say the air in the jar is saturated?*

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23: The amount of water vapor required for saturation of the air is affected by temperature. Which contains more water vapor when this saturation point is reached; warm air or cold air?

24: Look at Table 1 on slide 15; water evaporation table. At 41°F, what is the water vapor content in grams per kilogram?

At 77°F what is the water vapor content?

25: What is meant by relative humidity?

26: What does relative humidity indicate?

27: Relative humidity can be changed in two ways. What is the first of these two ways?

28: In nature, how does water vapor usually get added to the atmosphere?

29: Besides adding water vapor, what is the second way that relative humidity can be changed?

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30: Once air hits its point of saturation, cooling does not change it's relative humidity. Instead, further cooling causes what to happen?

31: When air high above the Earth is cooled below it's saturation level, what does the condensing water vapor form?

32: When the water vapor content of the atmosphere remains constant; what effect does lowering the air temperature have?

33: When the water vapor content of the atmosphere remains constant; what effect does raising the air temperature have?

34: What is the "dew point temperature"?

35: If the water vapor in the air is cooled past the dew point, what does the air's excess water vapor turn into?

36: When does dew form?